

Course code	10SPS00301
Course title	Introduction to Theoretical Astronomy
Term	前期 1st Half
Credit(s)	2
The main day	
The main period	
School/Program	School of Physical Sciences
Department/Program	Common Subjects of Physical Sciences
Category	Common Subjects of Physical Sciences
Lecturers	

Instructor

Full name

NOMURA HIDEKO

MACHIDA MAMI

Outline

This course provides an overview of the basic astronomical sciences from the standpoint of theoretical astronomy and astrophysics, including the formation and evolution of galaxies, the birth and evolution of stars, the origin of the solar system, and other aspects of the astronomical hierarchy from the universe to the stars and planets.

Goal

Learn the theoretical aspects of astronomy, regardless of your major field of studies, such as theory, observation, or instrument development. Learn how to handle various hierarchies such as stars, galaxies, and the universe.

Grading system

01:Four-grade evaluation (A,B,C,D)

Grading policy

Students who attend more than 60% of the lectures will receive a grade based on their performance in the reports assigned multiple times during the lectures.

Lecture Plan

1. Introduction
2. Hydrostatic equilibrium
3. Stellar Structure
4. Gravitational instability

5. The basic physics of an accretion disk (low-temperature case)
6. Protoplanetary disk I
7. Protoplanetary disk II
8. Galactic Stellar Dynamics
9. AGN jet
10. Shock waves
11. Shock in the astronomical objects
12. Magnetohydrodynamic instability
13. The basic physics of an accretion disk (high-temperature case)
14. X-ray binaries

Location

online

Language

Japanese/English When students who do not understand Japanese are included in the course.

Textbooks and references

Reference book

"Fundamentals of Astrophysical Fluid Dynamics" Shoji Kato, Jun Fukue

Others

Students who are familiar with the contents of this lecture are kindly required to ask the lecturer about their attendance and evaluation.

Students are asked to do homework such as solving problem sets.